



Observation technologies used at the "Adaptation Project to the impacts of climate change on the coastal marine ecosystem of Peru and its fisheries (Coastal Marine Adaptation Project - CMAP)"

Contents

A fleet of small sailboats is scattered across a vast, blue ocean under a clear sky. In the foreground, a white boat with a blue hull is moving towards the viewer, leaving a white wake. The boat has the name 'El Nuro' written on its side in red cursive. Several people are visible on the deck. Other similar boats are visible in the distance, some with their sails up. The overall scene is one of a busy maritime activity.

- Overview of the Project
- Earth observation Technology integration
- Key learnings and recommendations

Coastal Marine Adaptation Project - CMAP

START: MAY-18
END: APR-23



GOAL

To support the Peruvian government in **reducing the vulnerability of coastal communities to climate change impacts** on marine-coastal ecosystems and fishery resources



PARTNERS

Artisanal fishers in the pilot areas of Piura and Lima, the Ministry of Production (PRODUCE) through the National Program 'A Comer Pescado,' and the Peruvian Institute of the Sea (IMARPE)



SCOPE

Northern and central coast of Peru (Máncora, Piura and Huacho, Lima)

Executor:



Cooperator:



ADAPTATION FUND

Implementer
and executor:



PESCA
Resiliente

Adaptación
Marino Costero



Project Components

C1: Implementation of **interventions to enhance the resilience** of communities and ecosystems

C3: **Capacity development and knowledge management** for implementing EbA and EAF.

C2: Deployment of a **modern and efficient environmental monitoring and prediction system**

C4: **Policies, regulations, and management** measures promoting the resilience of communities and ecosystems.

Main results

Implementation of **highly selective** gill nets

Development of **oyster cultivation and aquaponics systems**

Formalize **ten tourism initiatives and approve two provincial development plans** with local stakeholder support

Formalization of **22 artisanal fishing vessels** and establishment of a **commercial model with traceability in 33 vessels**

Implementation and formalization of **3 pilot plants for biofertilizer production** with associations of women

Acquisition and use of **new technologies for participatory climatic and oceanographic monitoring**

Ocean conditions

Early warning system (EWS)

- Dangers of climate change condition the sustainable development of fishing and aquaculture activities and generate a risk that affects economic income and the livelihoods of artisanal fishermen and aquaculturers
- There are some **early signs** that are known to predict some threatening sea conditions such as **harmful algal blooms (HAB), sulfur plumes and marine heat waves**
- The Project devised a **participatory early warning system** that would be **complemented with data provided by scientific equipment**
- This EWS is a component of a larger strategy of the Peruvian Sea Institute to research the impacts of climate change (i.e. analysis of trends, formulation of scenarios and **adaptation measures**)

Earth observation technology integration



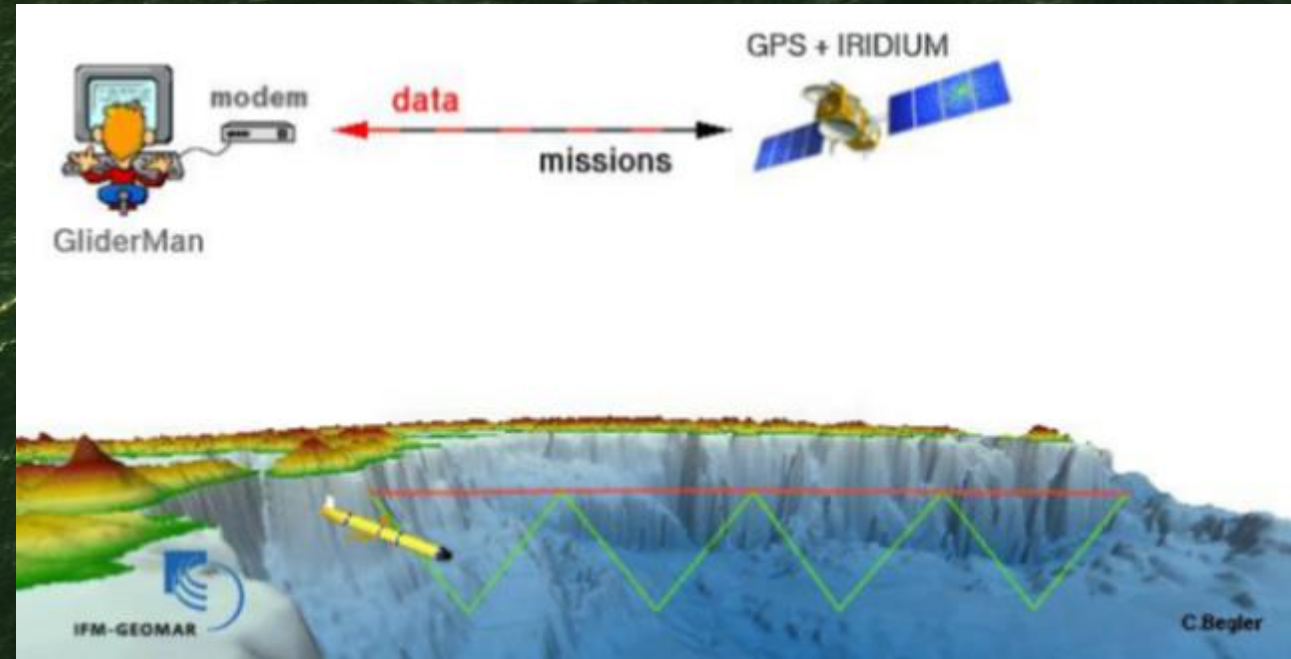
- The EWS required instruments to monitor environmental conditions and build a prediction system
- Gliders provide information about **oceanographic parameters** such as **temperature, salinity, oxygen, chlorophyll** and other parameters of the sea, **up to 1,000 meters deep**, and **up to the oceanic zone of the Peruvian Sea**.
- This information will contribute to determining **vulnerability scenarios and impacts of climate change** on marine-coastal ecosystems and their fishing resources.



Earth observation technology integration



- Gliders are launched in missions in which they collect information
- They dive into the sea and go up to the surface
- When they go up to the surface, they transmit their data to the US satellites



Early warning system (EWS) reports

Facebook



BlueConsult SAT
Publicado por AppNamePeru01 · 3 h ·

REPORTE SAT - OLAS DE CALOR MARINA
Nivel: Alerta
Fecha Evento: 14/08/2022
Zona Piloto: Mancora
Latitud: -4.133333
Logitud: -81.633333
Distancia de la Costa: 55 km
Punto Referencia: Playa Máncora
Anomalía de Temperatura: 1.92 °C
Datos Oceanográficos: 21.67 °C
Analista: Daniel Camarena
Observaciones:

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REPORTE SAT - OCM
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PERÚ

PRODUCE

BOLETIN INFORMATIVO SISTEMA SAT

N° 001-2022 REPORTE DE EVENTO DE OLAS DE CALOR MARINA (OCM)

NIVEL



UBICACION GEOGRAFICA



NIVEL

Normal
Alerta
Alarma

- Normal: anomalía de temperatura bajo umbral
- Alerta: anomalía de temperatura sobre umbral entre 1 a 4 días
- Alarma: anomalía de temperatura sobre umbral durante 5 o más días (evento de OCM)

PARÁMETROS DE OCM

Nivel:	Alerta
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Zona Piloto:	Mancora
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Distancia de la Costa:	55 km
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Observaciones:	

DEFINICION DE OLA DE CALOR MARINA

- Las olas de Calor Marinas (OCM), al igual que su contraparte atmosférica, sin eventos puntuales de temperatura extrema en relación con la temperatura estacional promedio en una región particular del océano.
- Pueden alterar la distribución de especies de aguas frías, y/o gatillar otros eventos extremos (como floraciones algales nocivas, hipoxias y plumas sulfurosas) en los ecosistemas, especialmente en las regiones costeras.



Ministerio de la Producción



GOBIERNO REGIONAL DE LIMA



IMARPE

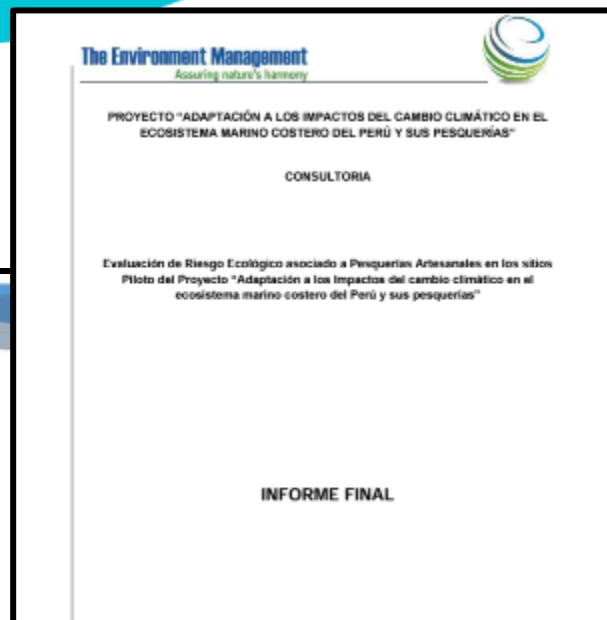
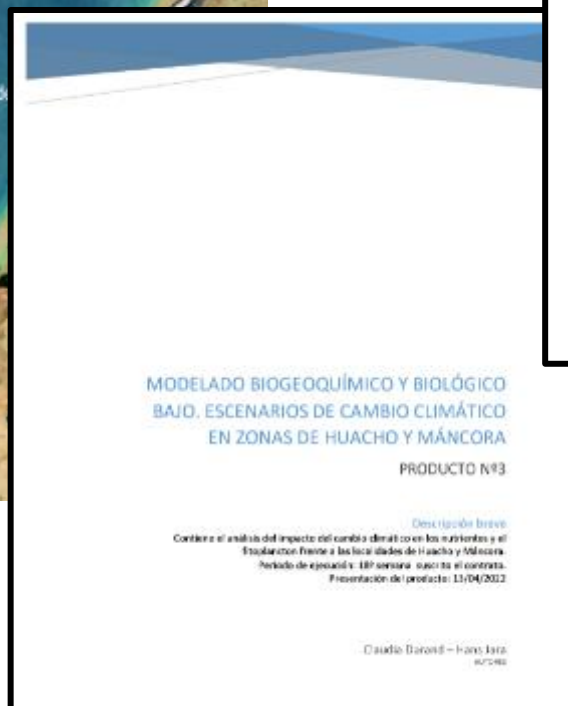


COEN

LIMA, 18 DE ENERO DEL 2023

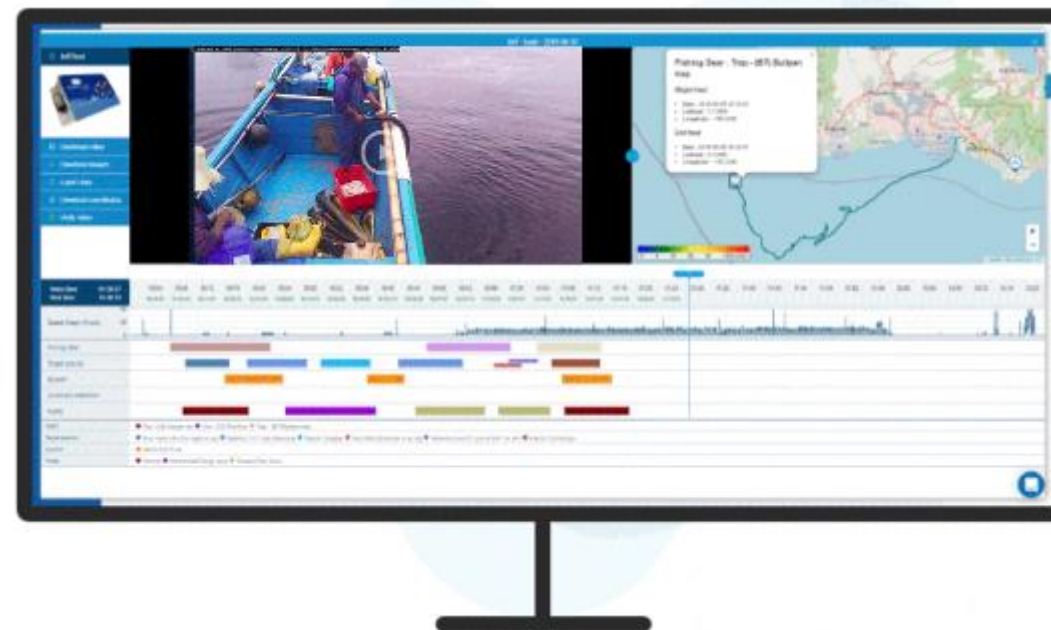
Fuente:Elaboración propia

Earth observation technology and the production of technical studies



- Satellite information was widely used to produce various technical studies to assess the impact of climate change
- IMARPE developed most of them gathering data from other types of earth observation technology, mainly satellites and its scientific vessel (Humboldt)

Another observation technology to help traceability



- The project installed **cloud based vessel monitoring** in **33 boats**
- This provided information about the **place of capture** and a **video of the capture** itself
- To implement this system is necessary to address first issues of **formalisation of fishermen** and to **organise them into associations**

Key learnings and recommendations

- **Capacities and a trajectory of scientific / technical production** is required to **deploy effectively sophisticated equipment**
 - IMARPE is a highly recognised institute and has very competent researchers
 - Prior the launching of the Project, IMARPE was already working in climate change
- The **early warning system continues to operate but it is not friendly to artesanal fishermen** ☑ reports are accesible in the SIOCC (Oceanografic Information Service for Climate Change) website
- Although fishermen have good relationships with IMARPE in both sites, **information usually flows one way**: from fishermen to IMARPE, but not the other way around
- It is required to **translate the technical reports into colloquial language** to reach the marine coastal communities
- **Traceability technologies require previous work in organization and formalization of fishermen**
- **NGOs working with fishermen can take the role to translate the information** coming from the early warning system as well as continue with the diffusion of traceability technology



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Comprometidos por naturaleza

